



PTO/SB/08a/b (08-03)

Approved for use through 07/31/2008. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449A/B/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet	1	of	4	Attorney Docket Number	291958171US4
-------	---	----	---	------------------------	--------------

Complete if Known

Application Number	10/695,419-Conf. #4483
Filing Date	October 27, 2003
First Named Inventor	LinLin Chen
Art Unit	2848 1745
Examiner Name	P.T. Dang T. Parsons

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number Number-Kind Code ² (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
TNP		US-2002-0043466	04-18-2002	Yezdi Dordi	7
		US-3,267,010	08-16-1966	Creutz et al.	204/52
		US-3,328,273	06-27-1967	Creutz et al.	204/52
		US-3,664,273 3664933	05-23-1972	Clauss	204/38 S
		US-3,716,462	02/1973	Jensen	204/38 B
		US-3,770,598	11-06-1973	Creutz et al.	204/52 R
		US-3,878,066	04/1975	Dettke et al.	204/43 G
		US-3,930,963	01-06-1975	Polichette et al.	204/15
		US-4,000,046	12-28-1976	Weaver	204/38 R
		US-4,134,802	01-16-1979	Herr	204/43 T
		US-4,272,335	06-09-1981	DANIEL J. COMBS	204/52 R
		US-4,279,948	07-21-1981	PETER E. KUKANSKIS et al	427/305
		US-4,576,689	03-18-1986	ALMAXUD M. MAKKAEV et al	204/20
		US-4,624,749	11-25-1986	JIMMY C. BLACK et al	204/15
		US-4,959,278	09-25-1990	HIDENORI SHIMAUCHI et al.	428/642
		US-4,990,224	02-05-1991	ISSA S. MAHMOUD	204/29
		US-5,021,129	06-04-1991	GARY V. ARBACH et al.	204/15
		US-5,115,430	05-19-1992	ELLEN L. HAHNE et al.	370/85.6
		US-5,116,430	05-26-1992	EIJI HIRAI	148/518
		US-5,161,168	11-03-1992	DONALD L. SCHILLING	375/1
		US-5,209,817	05-11-1993	UMAR M. AHMAD et al.	156/643
		US-5,256,274	10-26-1993	JAIME PORIS	205/123
		US-5,284,548	02-08-1994	DAVID H. CAREY et al.	156/630
		US-5,368,711	11-29-1994	JAIME PORIS	204/193
		US-5,372,848	12-13-1994	KIM J. BLACKWELL et al	427/520
		US-5,409,587	04-25-1995	GURTEJ S. SANDHU et al.	204/192.12
		US-5,443,865	08-22-1995	STEPHEN L. TISDALE et al	427/34
		US-5,472,509	12-05-1995	HIROSHI NOMURA	118/723 E
		US-5,482,891	01-09-1996	CHAN-LONG SHIEH et al.	437/129
		US-5,549,808	08-27-1996	MUKTA S. FAROOQ et al.	205/123
		US-5,576,052	11-19-1996	JOHN K. ARLEDGE et al.	427/98
		US-5,639,316	06-17-1997	CYRIL CABRAL et al.	448/227 148/277
		US-5,674,787	10-07-1997	BIN ZHAO et al.	437/230
		US-5,695,810	12-09-1997	VALERY M. DUBIN et al.	427/96
		US-5,719,447	02-17-1998	DONALD S. GARDNER	257/762
		US-5,723,387	03-03-1998	LAI-JUH CHEN	438/692
		US-5,730,854	03-24-1998	SYLVIA MARTIN	205/296
		US-5,750,018	05-12-1998	WILLIAM BRASCH	205/295
		US-5,824,599	10-20-1998	YOSEF SHACHAM-DIAMAND et al.	438/678
		US-5,882,498	03-16-1999	VALERY DUBIN et al.	205/261
		US-5,891,513	04-06-1999	VALERY M. DUBIN et al.	427/98
		US-5,897,368	04-27-1999	HERBERT STANLEY COLE et al.	438/625
		US-5,908,543	06-01-1999	TAKASHI MATSUNAMI et al.	205/159
		US-5,913,147	06-15-1999	VALERY DUBIN et al.	438/687
✓		US-5,932,077	08-03-1999	H. VINCENT REYNOLDS	204/224 R
TNP		US-5,969,422	10-19-1999	CHIU TING et al	205/257/762

Examiner Signature	Thomas H. Parsons	Date Considered	8/26/2004
--------------------	-------------------	-----------------	-----------

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449A/B/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)				Application Number	10/695,419-Conf. #4483
				Filing Date	October 27, 2003
				First Named Inventor	LinLin Chen
				Art Unit	2848- 1745
				Examiner Name	P.T. Dang T. Parsons
Sheet	2	of	4	Attorney Docket Number	291958171US4

TTP		US-5,972,192	10-26-1999	VALERY DUBIN et al.	205/101
		US-6,036,836	03-14-2000	JORIS PEETERS et al.	205/125
		US-6,065,424	05-23-2000	YOSI SHACHAM-DIAMAND et al.	118/696
		US-6,069,068	05-30-2000	HAZARA S. RATHORE et al.	438/628
		US-6,113,771	09-05-2000	UZIEL LANDAU et al.	205/123
		US-6,197,688	03-06-2001	CINDY REIDSEMA SIMPSON	438/678
		US-6,210,781	04-03-2001	THOMAS H. BAUM et al.	428/209
		US-6,309,524	10-30-2001	DANIEL J. WOODRUFF et al.	204/297.1
		US-6,319,831	11-20-2001	Wen-Jye Tsai et al.	438/678
		US-6,413,383	07-02-2002	Tony Chiang et al.	204/192.13
TTP		US-6,531,046	01-03-2002	Denis Morrissey et al.	205/219

FOREIGN PATENT DOCUMENTS							
Examiner Initials*	Cite No. ¹	Foreign Patent Document		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T
		Country Code ² -Number ³ -Kind Code ⁴ (if known)					
TTP		EU-2 285 174 98		12-15-1994	Mitsubishi Denki Kabushiki Kaisha		
↓		JP-52-16433		07-30-1975	Furukawa Electric Co.		
		JP-5-142262		06-14-1993	Oki Electric Co.		
TTP		WO-99/47731		09-23-1999	Semitool, Inc.		

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. **CITE NO.: Those patent(s) or publication(s) which are marked with an double asterisk (**) next to the Cite No. are not supplied because they were previously cited by or submitted to the Office in a prior application relied upon in this application for an earlier filing date under 35 U.S.C. 120. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
TTP		ALI, HASSAN O. et al., "A Review of Electroless Gold Deposition Processes," Gold Bull (1984) pp. 118-127, 17, (4)	
		BENEDETTI, A.V. et al., "Electrochemical Studies of Copper, Copper-Aluminum and Copper-Aluminum-Silver Alloys: Impedance Results in 0.5M NaCl," Electrochimica Acta (March 1995) pp. 000, Vol. 40, Great Britain	
		BINDRA, PERMINDER et al., "Fundamental Aspects of Electroless Copper Plating," Electroless Plating Fundamentals & Applications (January 1990) pp. 289-375, Noyes Data Corporation/Noyes Publications	
		DESPIC, ALEKSANDAR R., "Deposition and Dissolution of Metals and Alloys, Part B: Mechanisms, Kinetics, Texture, and Morphology," Comprehensive Treatise of Electrochemistry Vol. 7: Kinetics and Mechanisms of Electrode Processes (1983) pp. 451-527, Plenum Press, New York and London	
		DESILVA, MELVIN J. et al., "A Novel Seed Layer Scheme to Protect Catalytic Surfaces for Electroless Deposition," J. Electrochem. Soc. (November 1996) pp. 3512-3516, Vol. 143, No. 11	
TTP		DUBIN, V.M. et al., "Copper Plating Techniques For ULSI Metallization," Advanced Metallization and Interconnect Systems for ULSI Application in 1997: Materials Research	

Examiner Signature	Thomas H. Parsons	Date Considered	8/26/2004
--------------------	-------------------	-----------------	-----------

Substitute for form 1449A/B/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)				Complete if Known	
				Application Number	10/695,419-Conf. #4483
				Filing Date	October 27, 2003
				First Named Inventor	LinLin Chen
				Art Unit	2848 1745
				Examiner Name	P. T. Dang T. Parsons
				Attorney Docket Number	291958171US4
Sheet	3	of	4		

THP		Society Symposium Proceedings, (January 1998) pp. 405-411, Materials Research Society, Warrendale	
		DUBIN, V. et al., "Copper Electroplating for On-chip Metallization," 11 pgs, Advanced Micro Devices, Sunnyvale	*
		DUBIN, V.M. et al., "Sub-Half Micron Electroless Cu Metallization," Materials Research Society Symposium Proceedings, (January 1996) pp. 179-184, Vol. 427, Materials Research Society	
		DUBIN, V.M. et al., "Selective and Blanket Electroless Copper Deposition for Ultralarge Scale Integration," J. Electrochem. Soc. (March 1997) pp. 898-908, Vol. 144, No. 3, The Electrochemical Society, Inc.	
		FUJINAMI, T. et al., "Electroless Copper Plating on PZT Ceramic," Plating & Surface Finishing (May 1998) pp. 100-104	
		GABE, D.R., "Principles of Metal Surface Treatment and Protection," Second Edition (1978), 198 pgs, Pergamon Press, Great Britain	
		GIGNAC, L.M. et al., "Characterization of Plated Cu Thin Film Microstructures," Material Research Society Symposium Proceedings Vol. 564: Advanced Interconnects and Contacts (April 1999) pp. 373-434, Materials Research Society, Warrendale	
		KANG, S. et al., "Relationship Between Texture and Surface Morphology of Copper Electrodeposits," Plating & Surface Finishing (October 1995) pp. 67-70	
		KELLY, J.J. et al., "Copper Deposition in the Presence of Polyethylene Glycol: I. Quartz Crystal Microbalance Study," J. Electrochem. Soc. (October 1998) pp. 3472-3481, Vol. 145, No. 10, The Electrochemical Society, Inc.	
		KHERA, R.P., "The Basic Principles of Electrolytic Deposition," pp. 69-84	*
		KRISHNAN, R.M. et al., "Electroplating of Copper from a Non-cyanide Electrolyte," Plating & Surface Finishing (July 1995) pp. 56-59, Vol. 82, No. 7	
		KRÖGER, R. et al., "Properties of Copper Films Prepared by Chemical Vapor Deposition for Advanced Metallization of Microelectronic Devices," Journal of the Electrochemical Society (1999) pp. 3248-3254, Vol. 146, No. 9	
		LOPATIN, S. et al., "Electroless Cu and Barrier Layers for Sub-Half Micron Multilevel Interconnects," Multilevel Interconnect Technology, Conference 3214, SPIE (October 1997) pp. 21-32, Vol. 3214	
		LOPATIN, S. et al., "Extendibility of Ion-Metal Plasma and Electroplating Technologies for Damascene-Based Copper Metallization," 7 pgs, Advanced Micro Devices, Sunnyvale	*
		LOPATIN, S. et al., "Conformal Electroless Copper Deposition For Sub - 0.5 µm Interconnect Wiring of Very High Aspect Ratio," Proceedings of the Third Symposium on Electrochemically Deposited Thin Films (1997) pp. 271-288, Vol. 96-19, The Electrochemical Society, Inc., Pennington	
		LOWENHEIM, F.A. et al. (Eds.), "Gold" Modern Electroplating, Third Edition (1974) pp. 224-244	
		LOWENHEIM, F.A. et al. (Eds.), "Electroless Plating," Modern Electroplating, Third Edition (1974) pp. 710-747	
		MURARKA, S.P. et al., "Copper Metallization for ULSI and Beyond," Critical Reviews in Solid State and Materials Sciences (1995) pp. 87-124, Vol. 20, No. 2	
		MURARKA, S.P. "Metallization: Theory and Practice for VLSI and ULSI," 256 pgs (1993) Reed Publishing (USA)	
		NOBE, K., "Electrodissolution Kinetics of Metals and Alloys," (date?) 17 pgs, Department of Chemical Engineering, University of California, Los Angeles	*
✓		OSKAM, G. et al., "Electrochemical Deposition of Copper on a n-Si/TiN," Journal of The Electrochemical Society (1999) pp. 1436-1441, Vol. 146, No. 4	
THP		PALMANS R., et al., "Development of An Electroless Copper Deposition Bath For Via Fill Applications on Tin Seed Layers," Advanced Metallization for ULSI Applications in 1994:	

Examiner Signature	Thomas H. Parsons	Date Considered	8/26/2004
--------------------	-------------------	-----------------	-----------

* No month and/or year provided

Substitute for form 1449A/B/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>				Complete if Known	
				Application Number	10/695,419-Conf. #4483
				Filing Date	October 27, 2003
				First Named Inventor	LinLin Chen
				Art Unit	2818 1745
				Examiner Name	P.T. Dang T. Parsons
Sheet	4	of	4	Attorney Docket Number	291958171US4

TRP		Materials Research Society Symposium Proceedings, (January 1995) pp. 87-94 Materials Research Society, Pittsburgh	
		REID, J.D. et al., "Impedance Behavior of a Sulfuric Acid-Cupric Sulfate/Copper Cathode Interface," J. Electrochem Soc.: Electrochemical Science and Technology (June 1987) pp. 1389-1394, Vol. 134, No. 6	
		SATO, N., "Toward a More Fundamental Understanding of Corrosion Processes," Corrosion (May 1989) pp. 354-367, Vol. 45, No. 5	
		SCHLESINGER, M. et al. (Eds.), "Electrodeposition of Gold," Modern Electroplating, Fourth Edition (2000) pp. 201-225, John Wiley & Sons, Inc. (USA)	
		SCHLESINGER, M. et al. (Eds.), "Electroless Deposition of Nickel," Modern Electroplating, Fourth Edition (2000) pp. 667-684 John Wiley & Sons, Inc. (USA)	
		SHACHAM-DIAMAND, Y., "Electroless Copper for Micropackaging and Ultralarge-Scale Integrated Circuit Applications," Materials for Electronic Packaging (1995) pp. 221-240, Butterworth-Heinemann, Newton	
		SHACHAM-DIAMAND, Y. et al., "Electroless Copper Deposition for ULSI," Thin Solid Films 262 (1995) pp. 93-103	
		SHACHAM-DIAMAND, Y. et al., "0.35 μ m Cu-Filled Via Holes By Blanket Deposited Electroless Copper on Sputtered Seed Layer," 3 pgs, SEMATECH, Austin	*
		SMY, T. et al., "Simulation of Electroless Deposition of Cu Thin Films for Very Large Scale Integration Metallization," Journal of The Electrochemical Society (June 1997), pp. 2115-2122, Vol. 144, No. 6, The Electrochemical Society, Inc.	
		STEIGERWALD, J.M. et al., "Electrochemical Potential Measurements during the Chemical-Mechanical Polishing of Copper Thin Films," Journal of the Electrochemical Society (July 1995) pp. 2379-2385, Vol. 142, No. 7, The Electrochemical Society, Inc.	
		TAYLOR, T. et al., "Electrolyte Composition Monitoring For Copper Interconnect Applications," 26 pgs, Semitool, Inc. Kalispell	*
		WÜNSCHE, M. et al., "Morphology and Stability of Electrochemically Generated Copper Layers: The Effect of Electron Transfer and Nucleation Kinetics," Circuit World (1996) pp. 4-9, Vol. 22, No. 3	
		YOSHIKI, H. et al., "Adhesion Mechanism of Electroless Copper Film Formed on Ceramic Substrates Using ZnO Thin Film as an Intermediate Layer," J. Electrochem. Soc. (May 1998) pp. 1430-1434, Vol. 145, No. 5, The Electrochemical Society, Inc.	
		YUNG, E.K. et al., "Fundamental Study of Acid Copper Through-Hole Electroplating Process," J. Electrochem. Soc. (March 1989) pp. 756-767, Vol. 136, No. 3, The Electrochemical Society, Inc.	
		YUNG, E.K. et al., "Plating of Copper into Through-Holes and Vias," J. Electrochem. So. (January 1989) pp. 206-215, Vol. 136, No. 1, The Electrochemical Society, Inc.	
		L'Augmentation Du Courant Limite Par Les Differentes Formes D'Electrodes, ###20 pgs###	*
		Semitool, Inc. v. Novellus Systems, Inc.; Novellus's Final Invalidity Contentions; March 7, 2003; 255 pgs; U.S.D.C. District of Oregon	
		Semitool, Inc. v. Applied Materials, Inc.; Applied Materials' Final Invalidity Contentions; February 7, 2003; 36 pgs; U.S.D.C. District of Oregon	
TRP	✓	Semitool, Inc. v. Ebara Corporation and Ebara Technologies, Inc.; Ebara's Final Preliminary Invalidity Contentions; March 5, 2003; 19 pgs; U.S.D.C. District of Oregon	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹Applicant's unique citation designation number (optional). ²Applicant is to place a check mark here if English language Translation is attached.

Examiner Signature	Thomas H. Parsons	Date Considered	8/26/2004
--------------------	-------------------	-----------------	-----------

* No month and/or year provided